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THE PLANT DISEASE REPORTER

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Division of Mycology and Disease Survey

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BUREAU OF PLANT INDUSTRY

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XXI Number 13

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PRELIMINARY DATA RELATING TO THE DEVELOPMENT OF STEM RUST IN 1937

Summarized by E. C. Stakman

Data are being accumulated as rapidly as possible on the course of development of the rust epidemic in eastern Kansas, Missouri, central Illinois, and central Indiana. Slides exposed in the spring wheat area are being examined as promptly as possible to determine the dates on which spore showers occurred, and an attempt has been made to record accurately the factors affecting the establishment and development of the rust. Studies are being made to determine the degree to which rust outbreaks can be more accurately predicted in advance of actual rust development. Physiologic races are being identified just as rapidly as possible for the purpose of attempting to determine the probable amount of rust that will develop on different varieties and to explain the movement of rust where different varieties are involved. Further studies are in progress on the role played by barberries in nature in the development of local epidemics, and in the production, dissemination, and perpetuation of new physiologic races.

It is clear that rust did not overwinter appreciably in the uredial stage in Texas and northern Mexico during the winter of 1936-37. Nevertheless rust was heavier than usual in northern Mexico and developed heavily on late fields in central Texas. The exact dates on which the spore showers occurred in Texas are not yet available, but it is evident that some of them occurred prior to March 15. In Kansas and northward there were spore showers during the last few days of May. In much of the spring wheat region there were spore showers in late May, fairly heavy ones at certain places about June 12; and there was a period from June 18 to 24 inclusive, when there were rather heavy spore showers in much of the spring wheat region. For example, at St. Paul, during a 24-hour period June 23 and 24, upwards of 5,000 spores per square foot were being deposited (evidence of 50,000+ in some cases). At Brookings, South Dakota, about 1,000 spores were being deposited per square foot on June 11. This was followed by heavy showers from the 18th to the 24th, with another one on the 27th. The maximum number of spores fell on June 24, when more than 5,000 were deposited per square foot. This is about half the number that were deposited on June 22, 1935. At Fargo, North Dakota, about 5,000 were deposited per square foot on June 23, 1937, as compared with almost three times this number on June 22, 1935. At Fargo, spore showers of varying intensity occurred in 1935 almost every day from June 11 to June 24, whereas in 1937 the period of heaviest spore showers was from the 17th to the 24th of June. Spores were blown into the Fargo region, therefore, somewhat later in 1937 than in 1935, and in somewhat smaller numbers.

The data given above are, of course, incomplete. In any case, heavy spore showers do not necessarily result in heavy rust development, as the

weather subsequent to a spore shower determines whether rust will become established promptly, the percentage of spores that cause infection, the rapidity of development of pustules, and subsequent reinfection. In some years one or two spore showers are sufficient to cause an epidemic if followed by ideal weather for rust development. In other years, when spore showers are lighter or when they are followed by relatively unfavorable weather for rust, far more inoculum is required over a longer period of time.

Up to June 30, nine different physiologic races were identified from 58 isolations. Of these, 24 attack the durums and 34 do not. Forty of them attack Marquis and Ceres, race 56 - which appears to be particularly virulent on Ceres under some conditions - constituting about one-fourth of the total number of identifications. Thatcher is fairly or highly resistant to most collections.

There is an increasing demand for predictions of the probability of rust outbreaks in different regions. Past experience and the experience of 1937 indicate that if facilities were available for prompt determination of the number of spores in the air over a wide area, prompt determination of the physiologic races present, and careful and prompt analysis of weather data over a wide area, it would be possible to predict the probability of rust outbreaks with far greater accuracy than is possible at present. However, an extensive organization involving fairly heavy expense would be necessary.

WHEAT STEM RUST IN KANSAS

L. E. Melchers

The Kansas wheat crop came within a very close call of suffering a terrific loss from stem rust in 1937. Infection in southern Kansas started from inoculum farther south and with favorable weather from the middle of May until the middle of June, rust spread uniformly and rapidly over the entire State. At this time we are working on a conservative estimate of the reduction in yield due to stem rust. We hope to have reliable figures upon which to base our opinion. The loss will be appreciable for the State, but fortunately, it did not result in a calamity, which it most surely could have done had the rust started just a little sooner. The following press notices were issued in order to inform the public of Kansas of the situation. (Kansas Agricultural Experiment Station).

(June 10). "In the last few days numerous inquiries have reached the Kansas State College about the wheat stem rust, or so-called black rust, situation in Kansas. According to Prof. L. E. Melchers, plant pathologist

of the Kansas State College, the situation may be summed up by saying that, although stem rust is widely scattered in small amounts, the Kansas wheat crop has not yet been damaged, but the distribution of black rust is very wide and is a potential danger. If the crop in south-central Kansas is harvested in a week's time, probably little injury will result to wheat in the southern counties, although low fields and fall-pastured fields may be injured.

"Weather conditions have been very favorable for rust spread the past two weeks in the eastern half of Kansas. From central Kansas northward there is ample time for considerable injury to the wheat crop, but much will depend upon the weather in the next ten days and how soon the crop ripens. With the abundance of moisture, dews and muggy weather will favor the spread and damage from stem rust."

(June 15). "The latest reports on the black rust of wheat situation in Kansas show that infection is general over all of eastern Kansas, according to L. E. Melchers, plant pathologist of the Kansas State College. Weather conditions are still favorable for rust spread, although several days of dry warm weather have greatly helped the wheat. Strong southerly winds a few days ago no doubt carried the rust northward to the spring wheat area. It now appears that some fields in southeastern Kansas will suffer a loss and some will produce pinched grain. Some fields in north central and northeastern Kansas may have appreciable injury from black rust. Wet fields and lodging have made conditions favorable for rust, and delayed ripening and harvesting in Kansas.

"Oats are showing crown and black rust in the southern part of the State and, due to the lateness of the crop, there is danger of considerable injury."

(June 23). "'The black rust threat and its damage to the Kansas wheat crop is a closed story for 1937', states Prof. L. E. Melchers, botanist of the Kansas State College. 'We were lucky to have gotten through by the skin of our teeth. If the black rust threat had started one week earlier, the Kansas crop could probably have been reduced by over 50 percent. As it is many farmers are still unaware of the injury but will have some surprises awaiting them when they thresh their crop. I would not attempt at this time to estimate what the loss has been to the wheat crop in Kansas', commented Prof. Melchers, 'but there are fields that will not pay for the cutting and many areas will produce pinched, shriveled, and light weight grain. We are working on the matter of determining what percentage of the crop has been lost from this year's epidemic. Those fields heavily infected with rust that were cut a little on the green side or a few days earlier than normal, will have a tendency to be damaged less than if they had stood longer.'"

STEM RUST IN NORTH DAKOTA

W. E. Brentzel

We are considering June 12 the date of first appearance of stem rust at Fargo this year. Spores which I examined on this date undoubtedly were those of stem rust. The occurrence at Mandan was of course much earlier, but, both fortunately and unfortunately, rust cannot be much of a factor in the wheat crop in that region. There is little left west of the Missouri River after the winds, drought, and grasshoppers took their toll. We are primarily concerned with the situation in the Valley and extending out west, I should judge, approximately 100 miles.

I have just returned from a survey trip between here and Park River in Walsh County. Going north from Fargo there is no question but that rust gradually dwindles. I found the heaviest infection in Cass County. In this region it is not difficult to find rust and it occurs on most of the plants on the leaves and low down on the sheaths. I should judge that 50 percent or more of the plants in many fields show traces of rust. In the vicinity of Grand Forks very little rust could be found, and in Walsh County only a few scattered traces were found. I have not covered other sections of the State, but have examined numerous samples from various counties. I have received samples this morning from Sargent, Richland, Barnes, and Steele counties. Evidently the condition in the southeast corner of the State is quite similar to the condition in Cass County. Rust occurs in most fields except those of Thatcher wheat. In many of the fields in this region the prevalence of plants showing rust ranges from 10 to 20 percent, judging from the best reports that I can obtain.

The grain in Cass County and southward is very dense and heavy; northward it is not unusually thick and rain is beginning to be needed. We have not had many dews the last few days nor have we had any rain. The weather still remains cool, especially during the night. These conditions have been very favorable for the development of the crop and in my opinion rust has not developed very rapidly considering the earliness of the first infection. (North Dakota Agricultural Experiment Station, July 2).

REPORTS OF DAMAGE TO WHEAT FROM SCAB

PENNSYLVANIA: We are completing our inspections for grain certification and find a considerable number of wheat fields infected with scab (Gibberella saubinetii). The infection is so severe in several cases that the fields were refused certification. (K. W. Lauer, Bureau of Plant Industry, Pennsylvania State Department of Agriculture, Harrisburg. June 28).

OHIO: Wheat scab is very severe in northwestern Ohio. (E. W. Mendenhall, June 30).

REPORTS ON BACTERIAL WILT OF SWEET CORN

On July 3 N. E. Stevens, who made a survey of sweet corn wilt (Aplanobacter stewarti) for the Division of Cereal Crops and Diseases, wrote to M. T. Jenkins:

"Bacterial wilt is very severe in the East on susceptible varieties as far north as Rockland County, New York. In a number of patches we counted 30 percent or over dead or seriously diseased plants.

"As yet there is little evidence of increase of the disease in Indiana."

Following are reports from Massachusetts and New York:

MASSACHUSETTS: Primary infection of Stewart's wilt of sweet corn was observed as a few scattered stalks in a field not yet in tassel in Bristol County on June 24. (O. C. Boyd, June 28).

NEW YORK: There is considerable corn wilt present in Nassau County, Long Island. Early resistant varieties show 40 percent infection with 20 percent loss. Some of the later resistant varieties show 10 to 15 percent loss. The corn flea beetle is present in abundance in most corn fields.

The corn flea beetle and bacterial wilt (about 5 percent) were found July 4, on Staten Island on Golden Bantam corn. (M. C. Richards, July 12).

OTHER REPORTS ON CEREAL DISEASES

SMUT ON SWEET CORN IN NEW YORK: Smut (Ustilago zeae) was found rather abundantly on sweet corn near Williamson, Wayne County. (L. E. Curtis, July 6).

BARLEY SCALD FOUND IN MISSOURI: A considerable infection of scald (Rhynchosporium secalis) was found on barley hybrids at the Experiment Station, Columbia, June 20. This seems to be the first report of the disease from Missouri. (A. G. Johnson).

CURLY TOP APPEARS IN UTAH TOMATO FIELDS

H. Loran Blood

Curly top has made its appearance on a sufficiently large number of plants in the tomato fields of northern Utah to cause concern for the 1937 canning crop. A brief survey of fields in the western part of Weber County and the northern and central portions of Davis County on June 23 revealed a degree of infection for that time of the year that is foreboding. The Hooper district carried an infection of approximately 15 percent. Compare such an infestation with an infestation of 14 percent at the same time in 1936, of 17 percent in 1935, and of 25 percent in 1934; years in which the tomato crop of the district was practically totally destroyed, and the seriousness of the situation is evident. The tomato crop is in about the same stage of development as June 7, 1934 at which time there was a curly top infestation of about 17 percent. Over 50 percent of the tomato crop of the State was destroyed by curly top that year. Approximately 4 percent of the tomatoes examined in the Clinton district were infested with the disease. This closely approximates the amount of the disease which developed in that district during the entire year of 1936.

The fear that a hot, dry summer will be disastrous to the tomato crop in many sections of Utah appears justified. (Division of Fruit and Vegetable Crops and Diseases in cooperation with Utah Agricultural Experiment Station).

ONION DOWNY MILDEW SITUATION IN NEW YORK

A. G. Newhall

Losses from Peronospora destructor on onions in the northeastern United States are likely to be above normal this year. This is due to the extra early and very widespread occurrence of the disease on both set onions and the crop grown from seed. Never before in New York has mildew been recorded on the seeded crop in June. A rapid survey the first week in July revealed its presence in nearly every field visited although onions had scarcely begun to "bottom up". The unusually frequent periods of precipitation in May are doubtless responsible. A correlation seems to exist between the presence of numerous backyard plantings of top set or multiplier onions on farms and in small towns near the muck and severe early outbreaks on the muck onions. In the town of Marion in the center of Wayne County, mildew was found on multiplier or set onions in 21 out of 60 gardens visited and evidently had been present in most of these infected gardens for many weeks. Similar results have been secured in surveys of other small communities where the home vegetable garden is a prominent feature of the landscape. It appears that the small town is an important source of primary inoculum.

During the last week in May, over 500 farm properties were examined in Wayne County on 95 miles of county road. Vegetable gardens were found on 240 of these and top set onions in 18 of them 8 of which were diseased. They were scattered widely over the county.

Thirty other diseased backyard plantings of top sets have been found out of some 50 examined at random in the course of numerous routine excursions out from Ithaca to a distance of 125 miles. One of these was nearly one-fourth acre in extent and is close enough to muckland onions (500 yards) to account easily for the severe infections there in June.

The effects of seed treatment are being nullified this year by the abundant airborne infections occurring on most of the experimental plots. (Cornell University, Ithaca, New York).

OTHER REPORTS ON ONION DOWNY MILDEW

MASSACHUSETTS: Specimens were brought to the college by a grower in Hampshire County on June 23. It has since been observed in several fields of set onions, confined to isolated or scattered spots in the fields. Reports by growers indicate that the disease was observed by them as early as June 15. In past years when onion mildew has been damaging it ordinarily was not observed or reported until the latter half of July or the first half of August. (O. C. Boyd, June 28).

NEW YORK: Onion mildew was noted on the Fayetteville muck in Onondaga County on Friday, June 25. (W. E. Field).

POTATO LATE BLIGHT IN NEW YORK

H. S. Cunningham

Late blight (Phytophthora infestans) has made its appearance in fields of Irish Cobblers in eastern Suffolk County, Long Island. Infected fields have been found at Cutchogue, Riverhead, and Orient. In the latter area the infection is general and considerable damage has already been done in certain fields. With one exception all infected areas are in fields which have been neither sprayed nor dusted this season. At the time of writing conditions are ideal for the spread of the disease.

REPORTS ON DOWNY MILDEWS OF VARIOUS CROPS

Judging from the number of reports of various downy mildews already given in this and preceding issues of the Reporter, this would seem to be a very favorable year for the development of these diseases. Most spectacular, of course, is the tobacco downy mildew. Others are potato late blight

(pp. 114, 172, 230, 244), and downy mildews on China aster (p. 141), spinach (pp. 170, 188, 216), lettuce (p. 216), cabbage (p. 216), and onions (pp. 216, 233, 243). Following are reports on two more downy mildews.

DOWNY MILDEW ON LIMA BEANS IN NEW YORK; Downy mildew (Phytophthora phaseoli) of Lima beans has been found in one field at Orient, Suffolk County, Long Island. The infestation in this case is severe but at present the disease is not general in the Lima bean growing sections of the County. (H. S. Cunningham, June 29).

DOWNY MILDEW ON HOPS IN A NEW LOCALITY IN WASHINGTON: On June 23 downy mildew (Pseudoperonospora humuli) was found on escaped hops growing along an irrigation ditch at Granger, Yakima County, Washington. This is the first official report of the disease in that territory. (G. R. Hoerner).

VEGETABLE DISEASES REPORTED FROM NEW YORK

(From New York State College of Agriculture Departments of Entomology and Plant Pathology Weekly News Letter, for dates indicated).

Potato mosaic in Genesee County: Some fields are showing much mosaic, 25 to 30 percent in the case of one field. (R. D. Morgan, June 21).

Tomato leaf blight: It appears from specimens sent to the College that Septoria leaf blight (S. lycopersici) of tomatoes is severe in some fields this season. (Charles Chupp, July 6).

Pod blight of Lima bean on Long Island: In Suffolk County pod blight (Diaporthe phaseolorum) is very general on Lima beans which have not been sprayed with bordeaux. (W. G. Been, July 6).

SUMMARY OF TOBACCO DOWNY MILDEW IN VIRGINIA, TENNESSEE, KENTUCKY, AND INDIANA, THIS YEAR

Paul R. Miller

VIRGINIA: Except in Mecklenburg County, downy mildew (Peronospora tabacina) on tobacco did not do a great deal of damage. In this county, however, the disease appeared approximately 15 days earlier (April 20) than in the rest of the State, and completely killed the plants in many beds.

TENNESSEE: Mildew was first observed in the dark fire belt in Henry County on May 11; in the burley section of eastern Tennessee, Knox County, May 13; and in upper Tennessee, Greene County, May 17. There was a very

active spread of the disease from the 16th to the 19th, but after the 20th temperature ranged from 80 degrees and above and mildew abated. The disease was the most widespread Tennessee ever experienced, but the actual damage was not great as in most cases the plants were large when infected.

KENTUCKY: Downy mildew was found near Guthrie about May 13, in the locality where it was first found a year ago. Last year, however, it was not observed until June 8. By June 19 the disease was widespread throughout the State having been observed in 28 counties. The period of most active dissemination seems to have been from May 24 to May 27. The damage was slight in Kentucky as very few plants were killed in the beds, and infected plants set in the field seemed to live as well as non-infected. The details of the situation in Kentucky have been presented previously by W. D. Valleau and E. M. Johnson in the Plant Disease Reporter (21:171, May 15. 182-184, June 1).

INDIANA: For the first time downy mildew was found in southern Indiana (Spencer and Warrick Counties on June 13). Most of the plants had been set in this vicinity at that time, consequently the damage was negligible. Dr. R. W. Samson of Purdue University had a report of the disease earlier in the New Albany district but he did not have an opportunity to check its authenticity. (Division of Mycology and Disease Survey).

REPORT OF COMMITTEE OF THE TOBACCO RESEARCH COUNCIL ON THE BLACKSHANK DISEASE OF TOBACCO

The following report was prepared for the purpose of bringing together some of the more important items of information on the blackshank disease of tobacco. The committee will welcome suggestions and criticism, as well as additions applying to the various sections of the United States where blackshank is found.

1. Distribution and importance. Blackshank (Phytophthora parasitica var. nicotianae) is a disease of major importance, causing in some fields a total loss of the crop. The six states in which the disease has been found to date, with the year of first recorded occurrence, are as follows: Florida and Georgia (1922), Alabama (1924), North Carolina (1931), Tennessee and Kentucky (1935).

The disease is generally distributed throughout the cigar-wrapper area of Florida and Georgia, but resistant varieties were grown on about 90 percent of the acreage in 1936, and the loss was estimated at 2 percent.

In North Carolina, the disease is present in the following Piedmont counties: Forsyth, Surry, Stokes, Rockingham, Guilford, Alamance, and

Person. The percent of loss is very small; however there is a grave possibility of the disease becoming wide spread.

In other areas blackshank is still of minor importance.

Nicotiana tabacum and N. rustica are the only species which have been found naturally infected in the United States. Most varieties of N. tabacum are susceptible throughout their entire period of growth. N. rustica is resistant. Plants of several other species have been successfully inoculated by artificial methods.

2. Environmental relations. Temperature is an important factor in the distribution of blackshank. The minimum and maximum for the development of the disease in plants of a very susceptible variety, when transplanted into heavily inoculated soil, are about 61° and 94° F., respectively. With a small dosage of Phytophthora, infection occurs only at temperatures near the optimum for the disease, about 82°. For plants inoculated a few days after transplanting, the minimum is about 75°.

Plant beds rarely show infection in the United States, because the temperature is too low. The disease first appears in the spring when the soil temperature during the day at a depth of from 2 to 4 inches reaches about 75°. This generally occurs in Florida in April, and in North Carolina in June. The soil temperature never becomes too high for infection during the growing season. However, susceptible plants have been grown in September and October in Florida, indicating that the pathogen becomes inactive during the summer months. The pathogen persists in the soil in the absence of host plants for several years.

Moisture is a factor of less importance than temperature. Infection takes place throughout a wide range of soil moisture conditions. Rains are favorable to the spread of the disease, but also favorable to the recovery of resistant plants. Leaf infection occurs in the field during periods of rainy weather, and according to reports may occasionally continue to develop after the leaves are harvested and hung in the curing barn. The pathogen is killed by fermentation of cigar tobacco, and probably also simply by the drying of infected leaves. The high temperature treatment and drying applied to flue-cured tobacco probably kill the pathogen, but no tests have been made on this point.

3. Dissemination occurs by means of plants from infested beds (rare in the United States), by water from infested fields, and by soil carried by wind, tools, animals, or man. Barnyard manure has not been demonstrated to be a source of infection in the United States, however the addition of tobacco scrap or trash to stable manure which is to be used on the tobacco crop would not be advisable.

4. Avoidance and control. Plant beds should be located on land which will not be flooded with water drained from infested fields. Pond water from the vicinity of infested fields should not be used for watering plant beds or for setting plants. Old beds should be sterilized by steaming or burning. Fields which are free from infestation at transplanting time seldom show serious losses, even if susceptible varieties are planted.

The planting of resistant varieties is the only satisfactory method of controlling blackshank in the cigar-wrapper area of Florida and Georgia. Seed of resistant cigar-wrapper varieties for the shade growers in these two states are being grown by the North Florida Experiment Station, Quincy, Florida.

In North Carolina where four- or five-year rotations, including tobacco, small grain, clover or lespedeza, and corn, are practiced, almost perfect control has resulted. Highly resistant flue-cured strains are being tested for quality by the Tobacco Station, Oxford, North Carolina. (July 7. L. O. Gratz, Quincy, Florida; James F. Bullock, Oxford, North Carolina; Randall R. Kincaid, Quincy, Florida, Chairman).

SOUTHERN SCLEROTIUM ROT CAUSING DAMAGE TO SUGAR BEETS IN ARIZONA

J. G. Brown

In a field of approximately one and one-half acres, grown for seed at Tubac, Santa Cruz County, Sclerotium rolfsii caused from 40 to 50 percent loss. This is the first record of the disease for a farm crop in Arizona. The organism was first recorded in this State in 1936, on Delphinium. (Arizona Agricultural Experiment Station).

SPRAY INJURY TO APPLES AND PEACHES

MASSACHUSETTS: Spray injury is more or less general in apple orchards this year where lime-sulfur or the combined lime-sulfur plus lead arsenate spray was used early in the season. Although it has been necessary to apply lime-sulfur in many orchards since the first cover spray, injury has not been so pronounced as it was in applications prior to the second cover. The unusual amount of spray injury in apples this spring is believed to be due to the following factors, aside from the kinds of materials used, named in the order of most to least importance: (1) Extremely tender foliage that developed during the unusually cloudy, damp weather. (2) Cloudy, muggy, weather that was not conducive to drying of sprayed foliage. (3) Low

vigor of tree. (4) Unusually hot, humid period from May 29 to June 1, prior to, during or following which many growers sprayed either with lime-sulfur alone or with lime-sulfur and lead arsenate. (5) Necessity of using lime-sulfur in the cover sprays in order to cope with the unusual scab situation. (6) Holding the spray nozzles too close to the trees in some orchards.

The use of such buffer materials as hydrated lime and calcium caseinate in the lime-sulfur plus lead arsenate spray appeared not to furnish the protection this year against spray injury that it does in most seasons, even though the spray mixture retained its yellow color in the tank and on the foliage. While instances of marked injury were observed where lime-sulfur alone was used during Memorial week-end, yet in general, this spray has produced less injury at any time during the season than the combined spray of lime-sulfur and lead arsenate. (O. C. Boyd, June 28).

NEW YORK: In Onondaga County considerable russeting of fruit is showing up in those apple orchards which were sprayed with bordeaux, especially oxy-bordo. In addition they have not obtained the control of scab, as have those growers who followed the lime-sulfur recommendations. (W. E. Field, July 12). In Orleans County growers report considerable copper russeting from the first cover spray. Sulfur burn on foliage and fruit is also evident in many blocks from first and second cover sprays. In most cases it is not serious as yet. (A. J. Nichols, July 12). In Monroe County arsenical injury on peaches is rather severe where at least 8 pounds of lime was not used for each pound of lead arsenate. Some injury is apparent on most peaches. A check-up of the zinc sulfate test plots indicate that this material where used in sufficient quantities was of some help in reducing the injury. (R. S. Granger, July 12).

FRUIT DISEASES IN NEW YORK

(From New York State College of Agriculture Departments of Entomology and Plant Pathology Weekly News Letter, for dates indicated).

Apple scab (Venturia inaequalis): Judging from reports in various recent issues, scab is generally distributed but is not severe in orchards where sprays were both thorough and timely. In Niagara County J. G. Goodrich reports (July 6) "A striking example of increase in scab infection due to a neglected orchard being the source of trouble was found this week, where a grower followed a combined spray and dust schedule. The schedule held fairly well where scab inoculum was light but failed gradually until the foliage is plastered near the neglected orchard."

Rust (Gymnosporangium spp.) on apple: Quince rust (G. germinale) is showing up seriously in some orchards in Orange County. Many growers

are unfamiliar with it, never having noticed it before. (R. W. Tousey, July 6). In Ulster County infections of both apple (G. juniperi-virginianae) and quince rust are common on the fruit in many orchards. (C. G. Small, July 6). Quince rust infection on Delicious apples is severe in some orchards in Columbia County. (S. R. Shapley, June 21).

Rust on quince: Considerable quince rust has been found on quinces in one orchard in Columbia County. (S. R. Shapley, June 28).

Pear blight (Bacillus amylovorus): Reports do not indicate much infection in apple orchards. On pears recent reports are as follows: Considerable blight is showing in a few pear orchards. (S. R. Shapley, July 6). Blight has shown up in Yates County in several orchards where it was thought earlier there was no new infection. However, blocks receiving bordeaux spray in full bloom are all right. (W. D. Allen, July 12). In Niagara County blight appears to be checking itself and many terminals are shooting out small growths at the base of the cankers. (J. G. Goodrich, July 12).

Brown rot of stone fruits (Sclerotinia fructicola): Reports indicate considerable loss to cherries, especially sweet cherries, but sour cherries were also affected. Prunes seem to have been very slightly affected, and up to July 12 there were very few reports on peach.

Valsa canker of peach: Peach cankers in one young orchard in Orleans County were identified by Dr. Hildebrand as due to Valsa sp. What percentage of the cankers on our young peaches are caused by this rather than the brown rot fungus is hard to tell. (A. J. Nichols, July 12).

Verticillium wilt of peach: Wilt is causing considerable damage in one young peach orchard in Monroe County. The orchard was interplanted with melons last year and tomatoes this year. (R. S. Granger, July 12).

Breakdown of cherry fruit: In Niagara County a breakdown condition similar to stippen in apples or drought spot in prunes is present in some blocks of Early Richmond cherries. (J. G. Goodrich, June 28). In Chautauqua County a new trouble appeared this year in Early Richmond cherries. The fruit seems to be outgrowing it to some extent, but it is leaving browned areas in the fruit. (C. K. Bullock, July 6). A "stippen" condition was noted in one block of Richmonds in Orleans County. (A. J. Nichols, July 12).

Virus disease of prune in Niagara County: The virus disease found several years ago infecting half a dozen prune orchards has spread seriously in one orchard examined recently. (J. G. Goodrich, June 14).

Black rot (Guignardia bidwellii) of grapes: Black rot is causing much damage in some vineyards in Dutchess County. (A. T. Williams, July 12).

SOME DISEASES REPORTED ON ORNAMENTALS

LEAF BLIGHT OF HONESTY PLANT IN MASSACHUSETTS: A florist in Plymouth County reported, with specimens, nearly a total loss of his extensive plantings of Lunaria biennis (honesty, moonwort, Peter's pence) caused by a species of Macrosporium which was fruiting heavily on the leaf lesions. (O. C. Boyd, June 25).

LEAF SPOT AND BRANCH CANKER OF PANSY IN MASSACHUSETTS: An extremely damaging case of leaf spot and branch canker of pansy was reported, with specimens, on June 14 by a market gardener in Winchester. A species of Phoma was fruiting heavily on both leaf and branch lesions. (O. C. Boyd, June 28).

LEAF SPOT OF WATER LILY IN TEXAS: G. H. Godfrey sent specimens of Nymphaea mexicana collected May 23 in the lily pond at the Weslaco Experiment Station, Texas. He stated that this species and one other showed considerable spotting, while other varieties were entirely free. The organism was determined by J. A. Stevenson and Edna E. Dicks as Cercospora nymphaeacea Cke. & Ell.

BLACK ROT LEAF SPOT OF BOSTON IVY IN THE DISTRICT OF COLUMBIA: Unusual prevalence of the leaf spot stage of Guignardia bidwellii on Ampelopsis tricuspidata has been generally observed during late June and early July. (H. A. Edson).

BLACK SPOT (DIPLOCARPON ROSAE) ON ROSE IN THE DISTRICT OF COLUMBIA: Black spot is general and severe on unprotected roses in the District of Columbia. Many bushes located in partial shade or receiving only a few hours sun each day have been practically defoliated. (H. A. Edson).

CEPHALOSPORIUM WILT OF PERSIMMON

Bowen S. Crandall and Ross W. Davidson

What appears to be a new disease of persimmon (Diospyros virginiana) has been found in central Tennessee. The only area known to be infected is a 12-mile strip in Rutherford and Cannon Counties extending from a point northwest of Readyville to one southeast of Bradyville. The lateral extent of the disease is apparently limited by two ranges of parallel hills.

Within the narrow valley thus formed a few isolated healthy trees may still be found. Usually persimmon occurs throughout this region in pure stands in abandoned fields. When the disease is introduced into one of these stands it seems to spread rapidly from tree to tree. The area where the first infection occurred, in 1933 or 1934 as far as can be determined by circumstantial evidence and reports of inhabitants, now contains no living trees. Adjacent areas have 80 percent of the trees dead and the remainder infected.

The external symptoms of the disease are those typical of a vascular infection causing wilt. On trees that were badly infected last summer, only small, chlorotic leaves appeared this spring. By June such trees were already dead. Those infected trees which appeared normal in the spring developed flags of yellow foliage in their tops upon the advent of hot, dry weather; or where the infection in the tree was more general all the leaves turned yellow and wilted. Obviously, many trees now appearing healthy may be infected. It appears, however, that once a tree is infected it is, at most, a matter of two or three years before death occurs. It is possible that during a period of hot, dry weather, following an extended wet period, infected trees will wilt and die with no preliminary symptoms. Such a loss might be attributed popularly to drought.

The internal symptom of the disease consists of black streaks running through the wood. These streaks are not confined to any particular annual ring although in the dying trees they are heavier in the outer sap wood. Streaking extends through the entire tree--roots, trunk, and limbs. These black streaks can be seen easily when the bark is cut away with an axe.

From such streaks in these diseased trees, a single fungus, Cephalosporium sp., has been consistently isolated. Cultures are characterized by abundant spore production which in a short time makes them pink.

Since internal symptoms similar to those caused by the Cephalosporium may be due to several other causes, cultures are necessary in order to diagnose this disease positively. Reports of the suspected occurrence of this disease on either native or exotic persimmons will be appreciated. Reports should be accompanied by specimens of infected wood, well wrapped to prevent excessive drying, and sent to the Division of Forest Pathology, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. (Division of Forest Pathology, July 12).

A CORRECTION

Dr. R. E. Vaughan writes that the cause of clover anthracnose reported from Wisconsin in the preceding issue, page 234, is Gloeosporium caulivorum instead of Colletotrichum trifolii.

JUNE WEATHER

In midwestern sections the first half of June was decidedly cool and the last half abnormally warm, making the monthly average near normal. Precipitation was substantial to heavy in many sections of the country, though the amounts were scanty in some limited areas. For the country as a whole the tendency was for seasonal temperatures and rainfall above normal in most sections.

Figure 23 shows that the temperature for June averaged remarkably near normal practically everywhere, with the majority of stations showing monthly means from 1° to 2° above normal. In fact, the average temperatures for the month were generally within 2° of normal, except in very limited areas. The uniformly near-normal temperature was a very unusual occurrence.

Figure 24 shows that, while limited areas had scanty precipitation, rainfall was near normal to considerably above in most sections. The lower Mississippi Valley and some adjoining sections, the middle and lower Rio Grande Valley, the Great Basin of the West, and parts of the Great Plains had much below-normal rainfall. On the other hand, from the Ohio Valley northeastward the monthly totals were decidedly above normal and unusually heavy rains occurred in the far Northwest. In some sections of the latter area the heaviest June rainfall of record was reported, the amounts running, locally, as high as 4 to 5 times the normal for the month. For June 1936, nearly all interior sections of the country had from less than one-fourth to only about one-half the normal rainfall. (Weekly Weather and Crop Bulletin for the week ending July 6, 1937).

APRIL - JUNE PRECIPITATION 1932 - 1937

The accompanying series of maps, Figures 25 to 30, showing the percentage of normal precipitation from April to June during each year from 1932 to 1937 is taken from a Department of Agriculture Press Release "July crop prospects normal compared with recent years", dated July 10. The maps are self-explanatory.

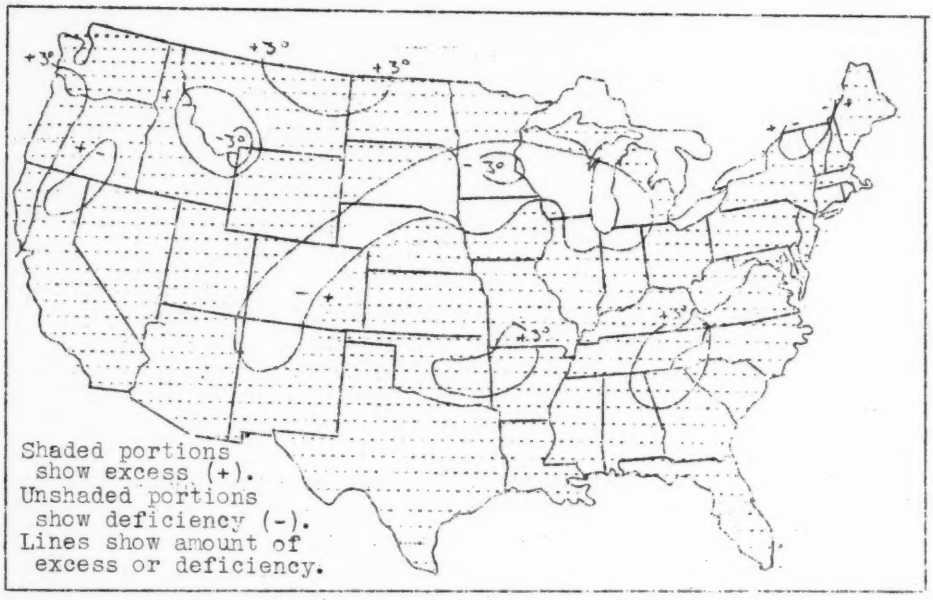

Fig. 23. Departure of Mean Temperature from the Normal for June 1937.

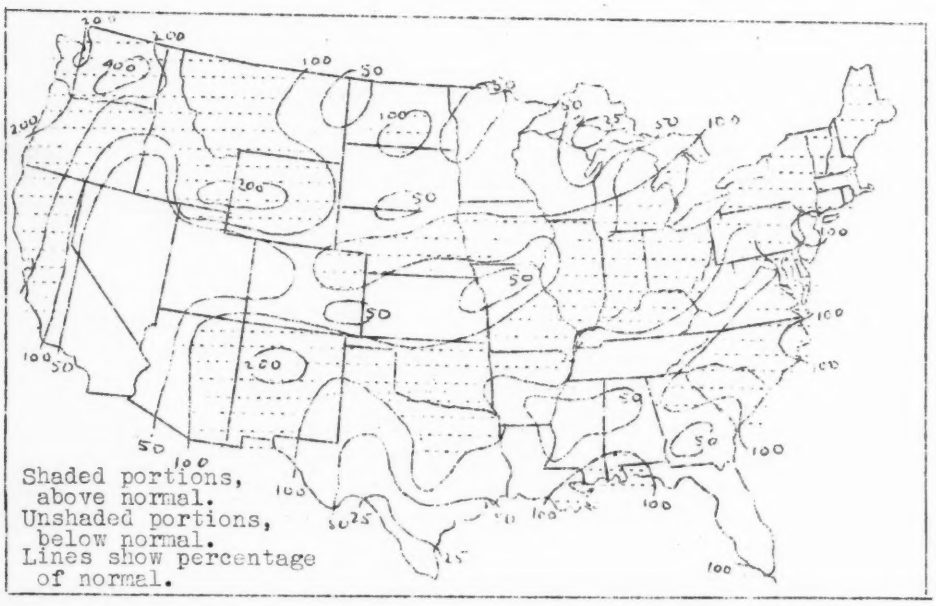

Fig. 24. Percentage of Normal Precipitation for June 1937.

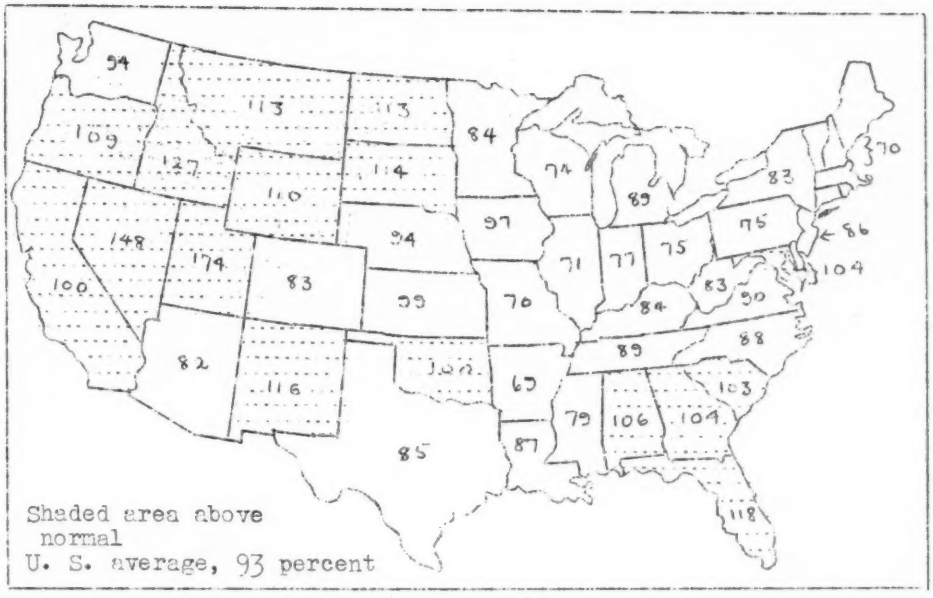

Fig. 25. Percentage of normal precipitation April - June 1932

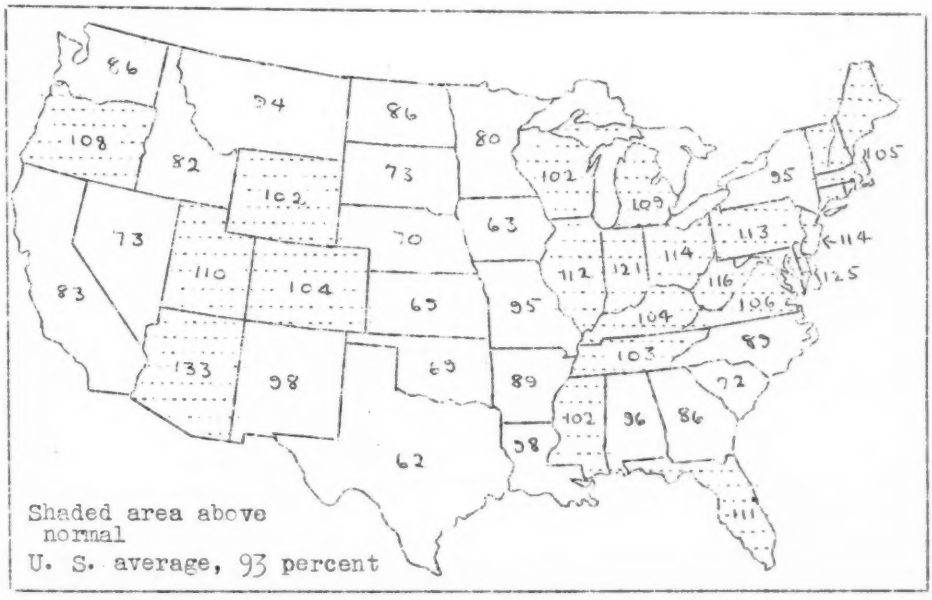

Fig. 26. Percentage of normal precipitation April - June 1933

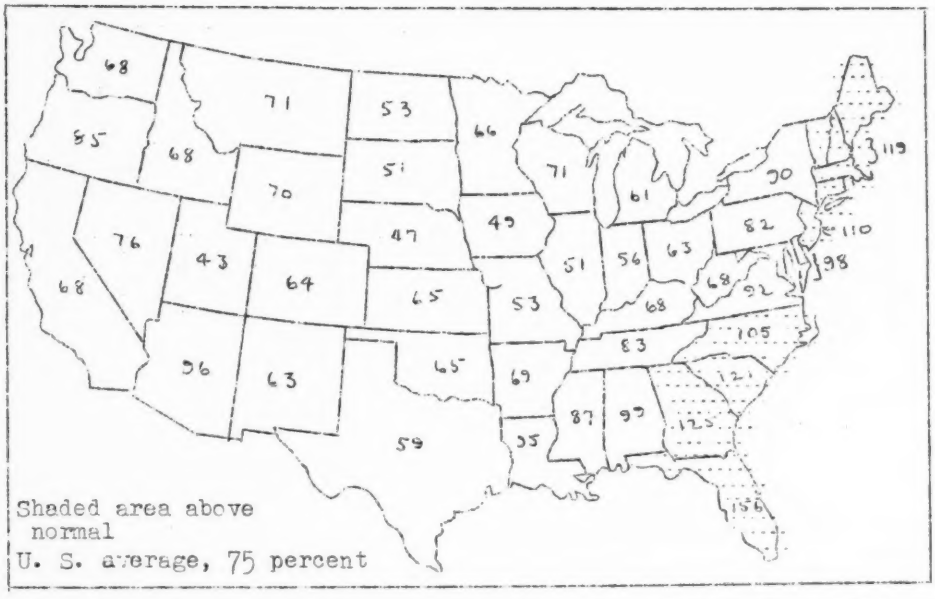

Fig. 27. Percentage of normal precipitation April - June 1934

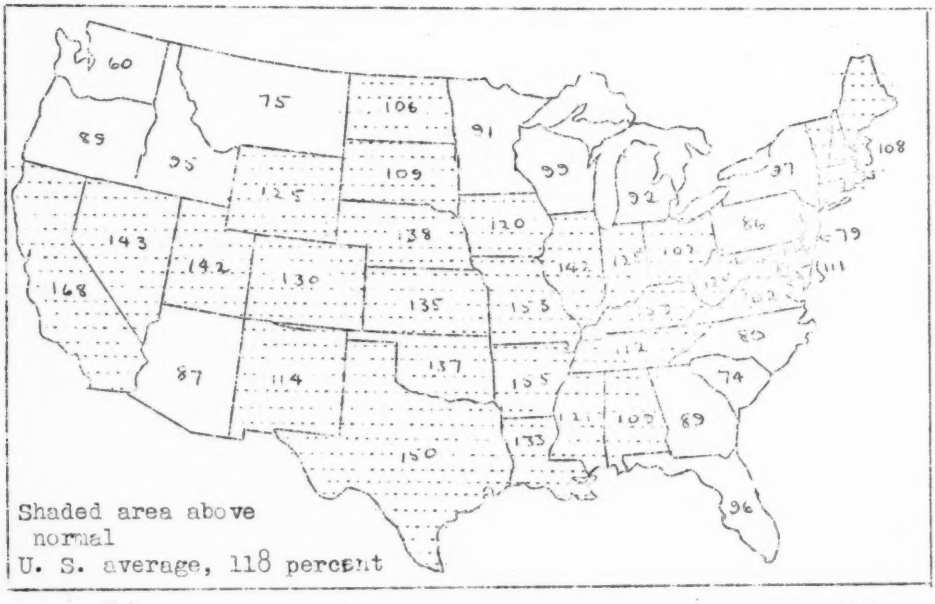

Fig. 28. Percentage of normal precipitation April - June 1935

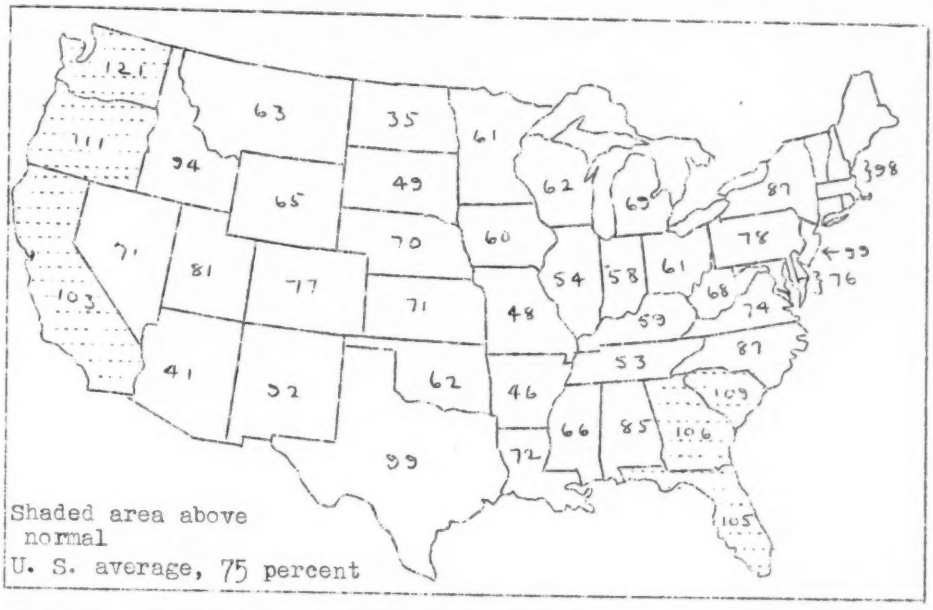

Fig. 29. Percentage of normal precipitation April - June 1936

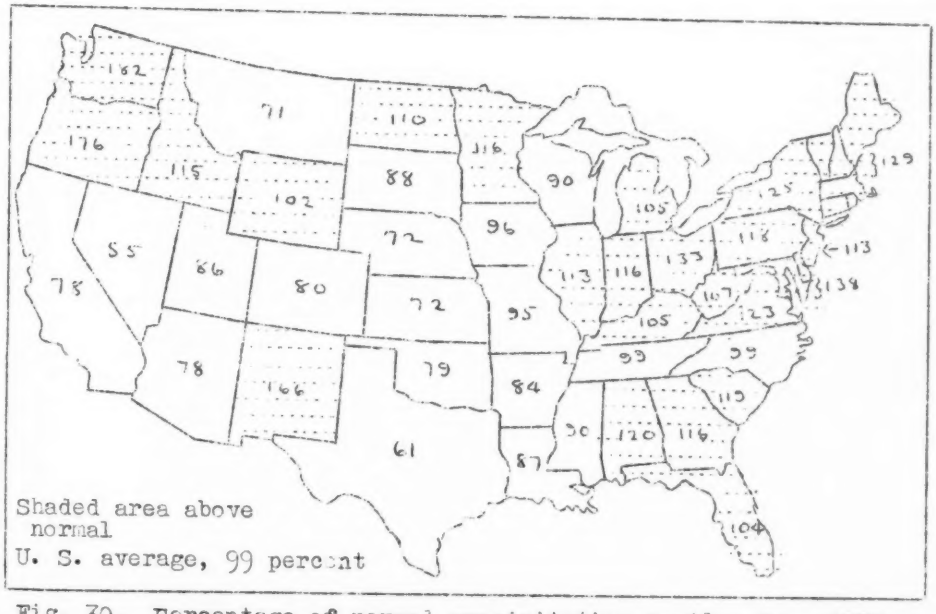

Fig. 30. Percentage of normal precipitation April - June 1937